SAF-RC-025 100-BC Remaining Pipelines and Sewers Soil Full Protocol FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02

DE 08/20/06

COMMENTS:

SDG K0459

SAF-RC-025

Waste Site: 1607-B2



Date:

23 August 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

. TechLaw, Inc.

Project:

100BC Remaining Pipelines & Sewers - Soil Full Protocol - Waste

Site 1607-B2

Subject: Semivolatile - Data Package No. K0459-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0459 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

	Sample: D.	Sample Date:	Weda V	Validation St	Date:
	J12PW5	6/29/06	Soil	С	See note 1
	J12PW6	6/29/06	Soil	C	See note 1
٠.	J12PW7	6/29/06	Soil	C	See note 1
	J12PW8	6/29/06	Soil	С	See note 1

¹⁻ Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

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If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

No equipment blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J".

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Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to a matrix spike duplicate result outside QC limits (18%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits, all 2,4-dinitrophenol (43%) results were qualified as estimates and flagged "J".

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All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Thirty-two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

Completeness

Data package No. KO459 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".
- Due to a matrix spike duplicate result outside QC limits (18%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".
- Due to an RPD outside QC limits, all 2,4-dinitrophenol (43%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods

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Thirty-two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K0459	REVIEWER	Project: 1607-82	PAGE 1 OF I
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U	All	Blank contamination
2,4-Dinitrophenol	J	All	MS & RPD

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

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Project: WASHINGTON CLOSU	oject: WASHINGTON CLOSURE HANFORD						•		
Laboratory: LLI	K0459]						
Sample Number	J12PW5		J12PW6		J12PW7		J12PW8		
Remarks	Remarks					ŀ	-		
Sample Date						6/29/06		6/29/06	
Extraction Date		7/10/06		7/10/06		7/10/06		7/10/06	
Analysis Date		7/26/06		7/25/06		7/26/06		7/27/06	
Semivolatile (8270C)	RQL	Result	Q_	Result	Q	Result	Q_	Result	Q
Phenol	660	340		340		330		330	_
bis(2-Chioroethyi)ether	660	340		340		330	U_	330	U
2-Chlorophenoi	660	340	U	340	U	330	U	330	υ
1,3-Dichlorobenzene	660	340	U	340	U_	330	IJ	330	Ü
1,4-Dichlorobenzene	660	340	υ	340	υ	330	U	330	Ü
1,2-Dichiorobenzene	660	340	U -	340	U	330	Ü	330	U
2-Methylphenol	660	340	U	340	U	330	U	330	U
2,2'-oxybis(1-chloropropane)	660	340	U	340	U	330	U	330	υ
3 and/or 4-Methylphenol	660	340	U	340	Ū	330	U	330	
N-Nitroso-di-n-propylamine	660	340	U	340	U	330	υ	330	Ü
Hexachioroethane	660	340		340	U	330	υ	330	
Nitrobenzene	660	340	U	340	υ	330	υ	330	U
Isophorone	660	340		340		330		330	
2-Nitrophenol	660	340	U	340	υ	330	υ	330	
2,4-Dimethylphenol	660	340	Ū	340	U	330	υ	330	U
bis(2-Chloroethoxy)methane	660	340	Ū	340	U	330	حا	330	U
2,4-Dichlorophenol	660	340	U	340	Ū	330	U	330	U
1,2,4-Trichlorobenzene	660	340	Ü	340	υ	330	U	330	U
Naphthalene	660	340	U	340	U	330	Ü	330	υ
4-Chloroaniline	660	340	U	340	U	330	U	330	ΰ
Hexachiorobutadiene	660	340		340		330	ָ כ	330	Ü
4-Chloro-3-methylphenol	660	340		340		330	دا	330	Ü
2-Methylnaphthalene	660	340		340		330	Ū	330	Ü
Hexachlorocyclopentadiene	660	340		340		330	U	330	υ
2,4,6-Trichlorophenol	660	340	U	340		330	U	330	U
2,4,5-Trichlorophenol*	660	840	U	850	υ	840	Ü	840	υ
2-Chloronaphthalene	660	340	U_	340	Ū	330	U	330	
2-Nitroaniline*	660	840	U	850	υ	840	Ü	840	U
Dimethylphthalate	660	340	U	340		330		330	
Acenaphthylene	660	340		340	_	330		330	_
2,6-Dinitrotoluene	660	340		340	υ	330	_	330	

Project: WASHINGTON CLOSU	1								
Laboratory: LLI	K0459 J12PW5		J12PW6		J12PW7		Lisacritic		
Sample Number Remarks		J12PVV5		DISPAAR		JIZPVV		J12PW8	
		6/29/06		6/29/06		60000		coope	
Sample Date Extraction Date					_	6/29/06		6/29/06	
Analysis Date		7/10/06 7/26/06		7/10/06		7/10/06		7/10/06	
	Inol		a		<u> </u>		_	7/27/06	_
Semivolatile (8270C)	RQL			Result	<u>Q</u>	Result	<u> </u>	Result	Q
3-Nitroaniline*		840		850		840		840	
Acenaphthene	660	340		340		330	_	330	_
2,4-Dinitrophenol*	660	840		850		840		840	
4-Nitrophenol*	660	840		850		840		840	
Dibenzofuran	660	340	_	340	_	330	_	330	
2,4-Dinitrotoluene	660	340		340		330		330	
Diethylphthalate	660	340		340		330		330	
4-Chlorophenyl-phenyl ether	660	340		340		330		330	
Fluorene	_660	340		340	_	330		330	
4-Nitroaniline*	660	840		850	_	840	_	840	
4,6-Dinitro-2-methylphenol*	660	840		850		840		840	
N-Nitrosodiphenylamine	660	340		340	حا	330		330	اد
4-Bromophenyl-phenyl ether	660	340		340	Į	330		330	
Hexachlorobenzene	660	340	ح	340	حا	330	حا	330	اد
Pentachlorophenol*	660	840		850		840	ı	840	ادا
Phenanthrene	660	340		340		330		330	
Anthracene	660	340		340		330		330	
Carbazole	660	340	ادا	340		330	ادا	330	ے
Di-n-butylphthalate	660	19		340		29		24	
Fluoranthene	660	340		340		330		330	כ
Pyrene	660	340	U_	340	υ	330	U	330	5
Butylbenzylphthalate	660	340	Ü	340	U	330	U_	330	د
3,3'-Dichiorobenzidine	660	340	U	340	U	330	Ü	330	υ
Benzo(a)anthracene	660	340	U	340	υ	330	υ	330	٥
Chrysene	660	340	U	340	Ų	330	U	330	U
bis(2-Ethylhexyl)phthalate	660	660	U	660	υ	660	J	660	
Di-n-octylphthalate	660	340		340		330	υ	330	
Benzo(b)fluoranthene	660	340		340	υ	330		330	
Benzo(k)fluoranthene	660	340	υ	340		330		330	
Benzo(a)pyrene	660	340		340		330		330	
Indeno(1,2,3-cd)pyrene	660	340		340		330		330	
Dibenz(a,h)anthracene	660	340		340		330		330	
Benzo(g,h,i)perylene	660	340		340	_	330		330	

Report Date: 08/02/06 17:01

Semivolatiles by GC/MS, HSL List

Client: TNUHANFORD RC-025 K0459 Work Order: 11343606001

RFW Batch Numb	ber: 0607L425	Client: TNUHANFORD RC-025 K0459				0459	59 Work Order: 11343606001					Page: la		
•	Cust ID:	J12PW5		J12PW5	,	J12P	W 5	J12PW6		J12PW7		J12PW		
Sample	RFW#:	001		001 MS	,	001 M	_	002		0.03		004		
Information	Matrix:	SOIL		SOIL		SOI	L	SOIL		SOIL		SOIL		
	D.F.:	1.0		1.0	0	1	.00	1.0	0	1.0	0	1.0		
•	Units:	ug/K	g	ug/I	(g	·ug	/Kg	ug/K	9	ug/K	g	ug/I		
	Nitrobenzene-d5	69	ŧ	. 63	ł	76	*	59	*	84	ł	61		
Surrogate	2-Fluorobiphenyl	69	*	65	*	· 80	*	48	ł	88	*	59		
Recovery	Terphenyl-d14	94	ł	. 74	*	95	*	63	¥	106	<	. 80		
•	Phenol-d5	68	¥	74	*	. 90	*	63	¥	85	*	66		
•	2-Fluorophenol	67	Ł	. 70	ŧ	83	- 8	58	ł	85	*	65		
	2,4,6-Tribromophenol	56	*	. 69	*	81	. % .===fl=:	38	{ =f1==	83	* =f1=	66		
Phenol	*****************	340	=fl= U	75	* *	93		340	#I.T==	. 330	.==	330		
bis (2-Chloroe	thyl)ether ·	340	U	78	*	. 95	*	340	U	330	U	330		
2-Chloropheno	l enzene enzene	340	U	. 74	1 .	91	. *	340	U	330	U	330		
1,3-Dichlorob	enzene	340.	U	73	*	87	*	340	U	330	U	330		
1,4-Dichlorob	enzene	. 340	ប	72	*	85	*	340	U	330	U	330		
C1,2-Dichlorob	enzene	340	U	77	¥	91	. *	340	ប	330	U	330		
2-Methylpheno	l	. 340	U	72	*	92	}	340	U	330	U	330		
2,2'-oxybis(1	-Chloropropane)	340	U	79	*	. 98	*	340	U	330	U	330		
4-Methylpheno	01	340	· U	. 72	ł	96	5 8	340	U	330	ū	330		
N-Nitroso-di-	n-propylamine	340	ט	. 85	*	112	. *	. 340	U .	330	U	330		
'Hexachloroeth	ane	· 340	U	. 69	¥	81	L %	340	U.	330	U	330		
Nitrobenzene_		340	Ū.	· 70	¥	80) · *	. 340	U	330	Ū.	330		
Isophorone	<u> </u>	⁷ 340	U	78	. *	99	5 %	340	U	330	U .	330		
2-Nitrophenol	·	340	. U	71	*	89	5 %	340	U	330	U	330		
2,4-Dimethylp	henol	340	U	. 56	k '	67	7 %	340	U	330	U	330		
bis (2-Chloroe	thoxy) methane	340	U	71	ł	8)· &	340	U	330	ប	330		
2,4-Dichlorop	ohenol	340	U	69 ⁻	ł	8	3 . %	340	U	330	U	330		
1,2,4-Trichlo	probenzene	340	U	68	ŧ	. 8:	. *	340,	U	330	U	330		
Naphthalene		340	U.	71	ŧ	8	5 %	340	U	330	บ	. 330		
4-Chloroanili	ine -	340	ָּט	55	ŧ	6:	2 %	. 340	U	330	U	330		
Hexachlorobut	adiene	340		75	Ł	8		340		330		330		
4-Chloro-3-me	ethylphenol	340	U	74	*	9'	7 %.	340	U	330		330		
2-Methylnapht	halene	340	U	. 74	ł	9	7 %	340		330		330		
Hexachlorocyc	halene	340	U	69	*	8	D 🐮	340	U	330	U	330		
2,4,6-Trichlo	prophenol	340		71	. 🕏	. 8			υ.	330		330		
2,4,5-Trichlo	prophenol	840	U	73	. *	امر ع	2 %	850	U	840	U	840		
*= Outside of	E EPA CLP QC limits.			73 W 4	723	10-		•		•				

Cust ID:	J12PW5	J12PW5	J12PW5	J12PW6	J12PW7	J12PW8
RFW#:	001	001 MS	001 MSD	002	003	004
2-Chloronaphthalene	340 U	70 k	89 %	340 U	330 U	330 U 840 U 330 U
2-Nitroaniline	840 U -	75 k ·	.96 ₺	850 U	840 U	840 U
Dimethylphthalate	340 U	77 %	96 %	340 U	330 U	330 U
Acenaphthylene	340 U	77 %	96 🖁	. 340 U	330 U	330 U
Acenaphthylene2.6-Dinitrotoluene	340 U	74 *	90 %	340 U	330 U ,	330 U
3-Nitroaniline	840 U	71 🕏	86 🖁	850 U	840 U	840 U
Acenaphthene	340 U 🦯	72``\	91 🕻 ·	340 U	330 U	330 U
2.4-Dinitrophenol	840 UJ	28 😵	18 * %	850 UJ	840 U J	840 UJ
2,4-Dinitrophenol	840 U,	. 78 *	103 %	850 U	840 U	840 U
Dibenzofuran	340 U	74 %	92 😵	340 U	330 U	330 U
2,4-Dinitrotoluene	340. U	78 ° %	103 %	340 U	. 330 U	330 U
Diethylphthalate	340 U	.75 ₺	94 1	340 U	330 U	330 U
4-Chlorophenyl-phenylether	. 340 U	71 %	88 🕻	340 U ·	330 U	່ 330 ປ
4-Chlorophenyl-phenylether	340 U	72 %	92 %	340 U	330 U	. 330 U
4-Nitroaniline	840 · U	67 🐮	89 %	850 U	. 840 U	840 U
4,6-Dinitro-2-methylphenol	840 U -	· 66 🕏	67 %	850 บ	840 U	840 U
N-Nitrosodiphenylamine (1)	340 U	55 🕏	64 \$	· 340 U	330 U .	330 U
4 Brononhaniel sharelathar	· 340 U	. 60 😮	69 😵	340 U	330 U	330 U
Hexachlorophenol	. 340 U	70 %	. 78 💃	340 U	330 U	330 U
Pentachlorophenol	840 U	75 🕏	86 🐇	850 U	840 U	840 U
Phenanthrene .	340 U	76 ¥	90 🚼	340 U	330 U	330 U
Anthracene	340 U	79 %	95, 1	340 U	330 U	330 U
Carbazole	340 U	72 %	83 %	340 U	330 U	330 U
Carbazole Di-n-butylphthalate	19 J	· 73 %	83 k	340 U	29 J	24 J
Fluoranthene	340 U	79 ₺	91 . %	340 U	330 U	330 U
Pylene	340 U	78 %	101 - 1	340 U	. 330 U	330 U
Butylbenzylphthalate	340 U	78 ¥	· 94 - ¥	340 U	330 U	330 U
3,3'-Dichlorobenzidine	340 U	. 61 😵	58 ≹ ∙	340 U	. 330 U	330 U
Benzo(a)anthracene .	340 U	76 ¥	90 ₹	340 U	330 U	330 U
Chrysene	340 U	75 · \$	· 92 %	340 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	(60 120 B) · 72 %	86 %	340 U LCO 44 123BU	330 U (66 83 JJB U 330 U	LLO OFFICE U
Di-n-octyl phthalate	340 U	78 %	97	340 U	330 U	330 U
Benzo(b) fluoranthene	340 ·U	82 😵		340 U	,330 U	330 Ū
Benzo(k) fluoranthene	340 U	78 %	. 100 %	340 U	330 U	330 U
Benzo(a) pyrene		. 82 %	98 %	340 U	330 U.	
Benzo(a)pyrene Indeno(1,2,3-cd)pyrene	340 U	79 %	92 %	340 U	330 U	19 J
Dibenz (a, h) anthracene	340 U	78 🕏	89 🛊.	340 U	330 U	18 J
Benzo(g,h,i)perylene	340 · U	78 *	90 %	340 U	330 U,	21 J

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Report Date: 08/02/06 17:01

Semivolatiles by GC/MS, HSL List

Client: TNUHANFORD RC-025 K0459 Work Order: 11343606001 Page: 2a RFW Batch Number: 0607L425 SBLKZZ BS Cust ID: SBLKZZ 06LE0552-MB1 RFW#: 06LE0552-MB1 Sample SOIL SOIL · Matrix: Information 1.00 1.00 D.F.: .ug/Kg ug/Kg Units: Nitrobenzene-d5 ł 62 88 88 . 68 Surrogate 2-Fluorobiphenyl Terphenyl-d14 116 67 Recovery Phenol-d5 105 74 2-Fluorophenol 92 65 2,4,6-Tribromophenol 330 U 71 Phenol bis (2-Chloroethyl) ether 330 U -2-Chlorophenol . 330 U 70 330 U 1.3-Dichlorobenzene 330 U 62 1.4-Dichlorobenzene C1.2-Dichlorobenzene 330 U 330 U 69 330 U 330 U 70 N-Nitroso-di-n-propylamine 330 U 74 Hexachloroethane_____ 330 U Nitrobenzene____ 330 U Isophorone 330 U 2-Nitrophenol 330 U 66 2,4-Dimethylphenol 330 U bis (2-Chloroethoxy) methane 330 U 2,4-Dichlorophenol 330 U 1,2,4-Trichlorobenzene · 330 U Naphthalene 330 U · 4-Chloroaniline 330 U Hexachlorobutadiene 330 U 4-Chloro-3-methylphenol 330 U

76

330 U

330 U

830 U

2,4,5-Trichlorophenol
*= Outside of EPA CLP QC limits.

Hexachlorocyclopentadiene____

2,4,6-Trichlorophenol_____

2-Methylnaphthalene

Cust ID: SBLKZZ

000016

SBLKZZ BS

1	RFW#: 06LE0552-ME	31	06LE0552-ME	31	• •
2-Chloronaphthalene	330	ט	72	*	
2-Chloronaphthalene	830	U	77	¥	
Dimethylphthalate	330	U	75	¥	
Acenaphthylene	330	U	78 .	*	•
Acenaphthylene 2,6-Dinitrotoluene 3-Nitroaniline	330	U	77	*	
3-Nitroaniline	830	U	90	*	
Acenaphthene	330	U	72	¥	
2.4-Dinitrophenol	830	υJ	47	Ł	• ,
4-Nitrophenol_		U	76	ł	
Dibenzofuran	330	U	74	*	
2,4-Dinitrotoluene	330	U	83	ł	
Diethylphthalate	330	U·	76	¥	
Diethylphthalate	330	U	74	¥	•
Fluorene	330	U	76	ŧ	
A-Mierosnilina	י אזא	U	72 ·	ł	
4,6-Dinitro-2-methylphenol	830	U	58	ł	•
N-Nitrosodiphenylamine (1)	330	ប	53	ŧ	
4-Bromophenyl-phenylether_	330	U	, 62	¥	
Hexachlorobenzene	330	U	. 71	·¥	
Pentachlorophenol	830	U	· 83	ŧ	•
FILEITAILLILEITE		U	71	ŧ	
Anthracene	330	Ū	.75	ŧ	
Anthracene Carbazole Di-n-butylphthalate	330	ט	71	¥	/ 12
Di-n-butylphthalate	330	U	71	¥	$arc{a}{a}$
Pluoranthene Pyrene Butylbenzylphthalate	330	Ü	78	ŧ	81
Pyrene	330.	Ü	68	×	
Butylbenzylphthalate	330	Ū	69	¥	
3.3'-Dichioropenzioine	.5.5U	U	77	¥	
Benzo(a)anthracene	<u>· </u>	Ū	76	¥	
Chrysene	330 __		75	ł	·
bis (2-Ethylhexyl) phthalate_	(40 2 0	J Ü	72	ŧ	
Di-n-octyl phthalate	330	Ū	74	ŧ	•
Benzo(b) fluoranthene	330	Ū	77	¥	
Benzo(k) fluoranthene	330	U	76	*	
Benzo(k) fluoranthene	330	U	78	ŧ	•
Indeno(1,2,3-cd)pyrene	. 330	U	. 69	¥	
Dibenz (a, h) anthracene	330	U	68	ł	, .
Benzo(g,h,i)perylene	330		68	ŧ	· ·
(1) - Cannot be separated i	from Diphenylamine.	. '	*= Outside (ρ£	EPA CLP QC limits.

9999999

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD RC-025

LVL#: 0607L425

SDG/SAF # K0459/RC-025

W.O. #: 11343-606-001-9999-00 Date Received: 07-06-2006

SEMIVOLATILE

Four (4) soil samples were collected on 06-29-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 07-10-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 07-23,25,26,27-2006.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

- 1. Samples were extracted and analyzed within required holding time.
- 2. The sample results were reported on a dry-weight basis.
- 3. Non-target compounds were detected in the samples.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. One (1) of one hundred twenty-eight (128) matrix spike recoveries was outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
- 8. Internal standard area and retention time criteria were met.
- 9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 9 pages.



- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Jain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som\gorup\data\bna\mu-banford\0607-425.doc

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Lionville Laboratory Sample Discrepancy Report (SDR) SDR#. 6/05/263
Initiator: Robert Corden Batch: Courses Parameter: Corsit
Date: 9/6/4. Samples: 050 Matrix: 50/1 Client: The Harford Re Old Method: Sweet McAWW/CLP/ Prep Batch: Old OSS
Client: The Harford Re Ols Method: SWAADMCAWW/CLP/ Prep Batch: Ole OSSZ
1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C
Transcription Error Wrong Test Code Other b. General Discrepancy
Missing Sample/ExtractContainer BrokenWrong Sample PulledLabel ID's IllegibleHold Time ExceededInsufficient SamplePreservation WrongReceived Past HoldNot Amenable to Analysis
Note: Verified by [Log-In] or [Prep Group] (circle)signature/date:
c. Problem (Include all relevant specific results; attach data if necessary)
24 distriptional spile receivery catorle GC lands. 184 (20-12046) CKIN MS/BS
2. Known or Probable Causes(s) Quite pleads the bit eratio chromotographic behave respecially if the
Ge system is contamed with high being nationals
PANIAO
3. Discussion and Proposed Action Other Description:
Re-log
Entire Batch Following Samples:
Re-leach Re-extract
Re-digest Revise EDD
Change Test Code to
Place On/Take Off Hold (circle)
4. Project Manager Instructionssignature/date: 4. Project Manager Instructionssignature/da
Disagree with Proposed Action; See Instruction I /Include in Case Narrative
Client Contacted: Date/Person
Add
5. Final/Actionsignature/date: Own 8816 Other Explanation:
Electronic COC Revised EDD Corrections Completed
When Final Action has been recorded, forward original to QA Specialist for distribution and filing.
Route Distribution of Completed SDR Route Distribution of Completed SDR X Initiator Metals: Beegle
X Lab General Manager: M. Taylor Inorganic: Perrone
Z Project Mgr. Stone/Jennson GC/LC: Kiger Data Management Stiwell MS: Rychlak/Daley
Sample Prep: Beegle/KigerLog-in: PenyAdmin:
Other:

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MASTRICTOR CLOSEL	Washington Closure Hanford CHAIN OF CU					CUSTODY/SAMPLE ANALYSIS					RC-025-021		Page 1	o; T
Collector C. Martinez Kevin St			any Contact Martinez	Telephone 509-53				Project Coordinator KESSNER, JH		Price Code			Data Turnaround	
Project Designation 100-BC Remaining Pipelines	1		Sampling Location 1607-B2: pipeline				. 1	SAF No. RC-025		Air	Quality	, 	15 days 8	
Ice Chest No. AF	5-04-123		Field Logbook No. COA -EL-1585-6 RG6				გ	Method of Shi fed ex	Daical	•				. 88
Shipped To	NATURE TO THE ROSTREMARIES	Offsit	e Property No. AO	60516	;		_	Bill of Ladina	/Air Bill	No.	See	051	ود	
POSSIBLE SAMPLE HAZAI			Preservation	None	Cool 4C	Cool 4C	Cool t	C None	Non	.	None	Cool 4C		
•	·~ 1/	00	Type of Container	₽Ğ	G/P	aG .	a.G	#G	G/I	<u>, </u>	G/P	aG		
Special Handling and/or St	lorage		No. of Container(s)	. 1	l	1		, I	1		l	1		
	•		Volume	250g	120g ·	120mL	2.50un	L SOCIAL	1200	_	E20mL	150ml.	<u> </u>	
000023	SAMPLE ANALYS	ris		See item (1) in Special Instructions.	Chromium Hex = 7196	PCB1 - 6062	Sem-VC 8270A (1			· H:	NECS-07; Strentium+ 19,90 — Total Sr	Pessicules - 8081;;Chlarb- Herbjattes - 2EA8151	296-2	4-06
Sample No.	Matrix •	Sample Date	Sample Time	-44-94	63.5	Mr. Cr. 7 di	100		1					
J12PW5	SOIL	6-29-0	F 1300	• /	・レ	1. 1	· i	NA	1	7A	NA	・レ		
J12PW5	SOIL	6-29-0	6 1308	•	ساو	·/	٠٠					1	1	
J12PW7		6-29-0		٠ نــــــــــــــــــــــــــــــــــــ	• 1/			_				1.		
J12PWA	SOIL	4.29-0	1325	•	• /	1.	1.	11/	1	\nearrow	1	1.	1	1
<u>·</u>						•			1-0			77.77	•	<u> </u>
CITAIN OF POSSESSIO		Siga/Pria			SPE	CIAL INSTA	RUÇTIC	NS .						Matrix *
Relimposited By Removed From 3728/3/5 7/5/04	6-29-06 Outelline 1030		Nel 3B 6-	sc/Time 17 29-06 hic/Time	Cada Moh Tin,	nium. Calcium, ybdenum. Nicke Vanadium]; IC	Chromiu el. Phosph	iest List) (Akunin na, Cobult, Copper onss, Potassium, S - 6010A (Add-ou)	. Iron, Lea elenium, S	d Lithi Shean I	um, Magnes Silver, Sodi	ium, Maugane um, Strontium,	se. Thallium	S-Sall SE-Sociatory SO-Solid SimShelpt W = Water O-Oil
Relimpushed By Removed From WE	4 7/5/66 1500	Received By/Sto		te/Time. EX	بجنيل	l - (CV) Camera Spectre spium-155}	-cap; (T	Flo List) (Cosium			wyiwa-15	1, Europians l'	نست	A-Air D\$-Drum Sulish DL-Orum Liques
Relique (hed) 3 y 12 moved From 7-6.	Date/Time	Restauring Police		o 930	,			6	29-0	06				Tritiser Wirkips L-Lignel
Relinquished By-Removed From	Date/Time Personnel not available to relinquish samples from 3728 Ref # 3B on 7 5/06								•	V-Vegetame A-Other				
Relinquished By/Removed From	Dole/Time	Roceived By/Sk	ored in D	nte/Tinse	Re	1# <u>39</u> on	<u>75</u>	<u>joc</u>						
LABORATORY Received By				Titl	ic ,	•			_				Date/Time	
LABORATORY Received By SECTION	•													

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В		D	Е
PROJECT:	1607-B	5	DATA PACKAGI	E: KO,	159
VALIDATOR:	TLI	LAB: LLT		DATE: 8/2	0/06
		 	SDG: KO	५८१	
		ANALYSES I	PERFORMED		
SW-846 8260		SW-846 8260 ((TCLP)	SW-846 8270	-	SW-846 8270 (TCLP)
SAMPLES/MAT	RIX				
TIZPW	5 713	PWL	よいりかつ	JISAC	78
	Ξ	•	<u> </u>		
			···	<u></u>	
					ارة
<u> </u>		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	• •	2011
		•	CASE NARRATIV		Yes N N/A
· ·		 	•		
		•	•		
			: .		· · · · · · · · · · · · · · · · · · ·
	•		•	•	-
				-	
2. İNSTRUM	MENT TUNING A	ND CALIBRATIO	ON (Levels D and E	E)	
GC/MS tuning/perf	formance check acc	eptable?		**************	Yes No N/A
Initial calibrations	acceptable?			***************************************	Yes No N/A
Continuing calibrat	ions acceptable?	**************		************	Ves No N/A
-	_				
-	_		**********************	*************	
Standards traceable	?	•			Yes No N/A
Standards traceable Standards expired?		•		***************************************	Yes No N/A

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No(N/A
Calibration blank results acceptable? (Levels D, E)	Yes No(N/A)
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	Yes (No) N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes 100 (N/A)
Transcription/calculation errors? (Levels D, E) Comments: bis (2-esly hexy phthalit - U as	Yes No (N/A) + RQ(a)
	<u>. </u>
<i>\rmale_\text{\tint{\text{\tint{\text{\tint{\tint{\tint{\text{\tin}\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\text{\tex{\tex</i>	10 FB
4. ACCURACY (Levels C, D, and E)	
Surrogates/system monitoring compounds analyzed?	Yes No N/A
Surrogate/system monitoring compound recoveries acceptable?	Yes No N/A
Surrogates traceable? (Levels D, E)	Yes No NA
Surrogates expired? (Levels D, E)	Yes No (N/A
MS/MSD samples analyzed?	
MS/MSD results acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	Yes No WA
MS/MSD standards? (Levels D, E)	, Yes No WA
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	
Standards traceable? (Levels D, E)	Yes No N/A
Standards expired? (Levels D, E)	Yes No (WA)
Transcription/calculation errors? (Levels D, E)	Yes No (VA)
Performance audit sample(s) analyzed?	Yes (No) N/A
Performance audit sample results acceptable? Comments: 2, 4 - dinitrophenal - 1870 MS - all	Yes No 🕅
	no pas

5. PRECISION (Levels C, D, and E)	\sim
MS/MSD samples analyzed?	Yes No N/A
MS/MSD RPD values acceptable?	Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards expired? (Levels D, E)	×_
Field duplicate RPD values acceptable?	
Field split RPD values acceptable?	/~
Transcription/calculation errors? (Levels D, E)	
	· .
	•
	
6. SYSTEM PERFORMANCE (Levels D and E)	\sim
Internal standards analyzed?	Yes No N/
Iinternal standard areas acceptable?	Yes No N/A
Internal standard retention times acceptable?	Yes No N/
Standards traceable?	
Standards expired?	
Transcription/calculation errors?	Yes No N//
Comments:	
7. HOLDING TIMES (all levels)	<u> </u>
Samples properly preserved?	
Sample holding times acceptable?	
Comments:	
	·•
	·

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETEC	TION LIMITS (all
levels)	<i>→</i>
Compound identification acceptable? (Levels D, E)	
Compound quantitation acceptable? (Levels D, E)	Yes No WA
Results reported for all requested analyses?	Yes)No N/A
Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No N/A
Laboratory properly identified and coded all TIC? (Levels D, E)	Yes No WA
Detection limits meet RDL?	Yes (No) N/A
Transcription/calculation errors? (Levels D, E)	Yes No WA
Comments: 32 over	
	•
	
9. SAMPLE CLEANUP (Levels D and E)	_
GPC cleanup performed?	Yes No (N/A
GPC check performed?	11
GPC check recoveries acceptable?	· · · · · · · · · · · · · · · · · · ·
GPC calibration performed?	j
GPC calibration check performed?	
GPC calibration check retention times acceptable?	7
Check/calibration materials traceable?	
Check/calibration materials Expired?	n e
Analytical batch QC given similar cleanup?	• • • • • •
Transcription/Calculation Errors?	
Comments:	100
· ·	

Date:

23 August 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100BC Remaining Pipelines & Sewers - Soil Full Protocol - Waste

Sites 1607-B2

Subject: Inorganics - Data Package No. K0459-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0459 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	. Yayledê Le î	. Validation	Pate -
J12PW5	6/29/06	Soil	С	See note 1
J12PW6	6/29/06	Soil	С	See note 1
J12PW7	6/29/06	Soil	С	See note 1
J12PW8	6/29/06	Soil	c	See note 1

^{1 -} ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

The state of the state of the first the state of the stat

All holding times were acceptable.

· · Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (56.6%), all antimony results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (45.5%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data package No. K0459 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

表现的变形,我们就是这种的人,只是这个人的是一**就就**不是一种的人,我们就是这种的人,只是

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to a matrix spike recovery outside QC limits (56.6%), all antimony results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (45.5%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

CONTRACTOR CONTRACTOR STATES

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

(4) 建建物、水体管、建筑物、建筑物、建筑等等。

Appendix 2
Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0459	REVIEWER TUT	P/őject: 1607-B2	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony	J	All	MS recovery
Silicon	J	All	LCS recovery

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD						1			
Lab: LLI	Lab: LLI SDG: K0459						1		
Sample Numb	er	J12PW5		J12PW6		J12PW7	•	J12PW8	}
Remarks									
Sample Date		6/29/06		6/29/06		6/29/06		6/29/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.07	U	0.07	U	0.07	U
Aluminum		5980		7540	匚	6310		5870	
Arsenic	10	2.6		5.2		3.6	L	3.0	
Boron		1.2		2.2	_	2.7		1.9	
Barium	2	69.2		175		94.4		80.2	
Beryllium		0.38		0.50		0.47		0.36	Γ
Calcium		4050	Γ	31200		5010		3260	Π
Cadmium	0.2	0.07	U	0.43		0.07	_	0.07	Ü
Cobalt		7.2		8.9		8.5		6.0	
Chromium	. 1	9.6		11.4		8.7	Γ	11.2	
Copper		14.3		24.3		_ 17.9		13.7	
iron		15900		18700		17400		13700	
Mercury	0.2	0.02	U	0.92		0.01	U	0.01	U
Potassium		1370		1990		1360		1450	
Lithium		6.8		10.1		7.0		6.3	Ε
Magnesium		4030		5240		4190		3440	Γ
Manganese		301		382		350		271	
Molybdenum		0.28	כ	0.33		0.40		0.35	
Sodium		151		.390		216		159	:
Nickel		10.9		11.7		10.6		10.6	L
Phosohorous		849		926		932	Ш	684	
Lead	5	4.3		9.6		5.4		4.4	
Antimony		0.42		0.42		0.42	į	0.42	IJ
Selenium	1	0.45		0.45		0.45		0.44	U
Silicon		396	-		7	377		473	J
Tin		1.0	U	1.0	IJ	1.0	כ	1.0	احا
Strontium		26.0		86.2		33.4		25.7	
Titanium		967		1170		1100		697	
Thallium		0.67	U	0.67	U	0.67	U	0.66	
Uranium		0.84	υ	0.85	U	0.84	U	0.83	U
Vanadium		36.7		41.4		39.8		32.3	
Zinc	1	37.2		67.0		40.2		37.2	
Zirconium		18		22.0		22.2		11.8	

INORGANICS DATA SUMMARY REPORT 07/21/06

CLIENT: THUMANFORD RC-025 K0459 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0607L425

					reporting	DILUTION
Sample	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	PACTOR
	*************		******	*****	********	********
-001	J12PW5	Silver, Total	0.07 u	HG/KG	0.07	1.0
		Aluminum, Total	E980	MG/KG	2.3	1.0
		Arcenic, Total	2.6	HG/KO	0.56	1.0
	•	Boron, Total	1.2	MG/KG	0.23	1.0
		Barium, Total	69.2	MG/KG	0.02	1.0
•	•	Beryllium, Total	0.38	MG/KG	0.02	1.0
	•	Calcium, Total	4050	NG/KG	1.6	1.0
	• •	Cadeium, Total .	9.07 u	MG/KG	0.07	1.0
		. Cobalt, Total	7.2	HG/KG	0.13	1.0
	•	Chromium, Total	9.6	HG/KG	0.12	1.0
	•	Copper, Total	14.3	KG/KG	0.12	· 1.0
•	•	Iron, Total	15900	hg/kg	0.52	1.0
. •		Hercury, Total	0.02 u	HG/KG	0.02	1.0
		Potassium, Total	1370	HG/KG	. 2.2	1.0
		Lithium, Total	6.8	HG/KG	0.03	1.0
		Hagnesium, Total	4020	HG/KG	0.93	1.0
		Manganess, Total	301	MG/KG	0.03	1.0
	•	Holybdenum, Total	0.28 4	MG/KG	0.28	1.0
	·	Sodium, Total	151	BG/KG	0.73	1.0
		Nickel, Total .	10.9	NG/KG	0.23	1.0
	•	Phosphorus, Total	149	HG/KG	0.86	1.0
		Lead, Total	4.3	HG/KG	0.30	1.0
		Antimony, Total	0.42 1	но/ко	0,42	. 1.0
	•	Selenium, Total	0.45 4	HG/KG	0.45	1.0
	•	Silicon, Total	396 🕏	ма/ка	2,2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
•		Strontium, Total	26.0	HG/KG	0.01	1.0
		Titanium, Total	967	HG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.64 u	MG/KG	0.84	1.0
•		Vanadium, Total	36.7	MG/KG	0.09	1.0
	•	Sinc, Total	37.2	MG/KG	0.15	1.0
		Zirconium, Total	16.0	MG/KG	1.0	1.0

1/23/04

INORGANICS DATA SUMMARY REPORT 07/21/06

CLIENT: TNUHANFORD RC-025 K0459 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0607L425

		•		•	REPORTING	DIFALIOR
BAKPLE	SITE ID .	ANALYTE	result	ETINU	LINIT	FACTOR
			*******		********	*******
-003	J12PW6	Silver, Total	0.07 u	HG/KG	0.07	. 1.0
	•	Aluminum, Total	7540	из/ка	2.3	1.0
	•	Arsenic, Total	5.2	NG/KG	0.59	1.0
•	•	Boron, Total	2.2	ng/kg	0.23	1.0
•		Barium, Total	175	MG/KG	0.02	1.0
•	•	Beryllium, Total	0.50	NG/KG	0.02	1.6
		Calcium, Total	31209	NG/KG	1.6	1.0
	•	Cadmium, Total	0.43	NG/KG	0.07	1.0
		Cobalt, Total	6.9	на/ка	0.13	1.0
		Chromium, Total	11.4	MG/KG	0.13	1.0
	•	Copper, Total	24.3	MG/KG	0.12	1.0
		Iron, Total	18700	NG/KG	0.52	1.0
		Mercury, Total	0.92	MG/KG	0.02	1.0
	·	Potassium, Total	1990	MG/KG	2.2	1.0
		Lithium, Total	10.1	ма/ха	0.03	1,0
		Magnesium, Total	5240	MG/XG	0.94	1.0
		Nanganese, Total	342	MG/KG	0.03	1.0
	• •	Molybdenum, Total	0.33	HG/XG	0.28	1.0
		Sodium, Total	390	MG/XG	0.73	1.0
		Nickel, Total	11.7	MG/KG	0.23	1.0
		Phosphorus, Total	926	HG/XG	0.87	1.0
		Lead, Total	9.6	MG/KG	0.30	1.0
		Antimony, Total	0.42 U	ис/ха	0.42	1.0
	•	Selenium, Total	0.45 u.	NG/KG	0.45	1.0
		Silicon, Total	884 I	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
	•	Strontium, Total	86.2	MG/KG	0.01	1.0
	•	Titanium, Total	1170	MG/XG	0.03	1.0
•		Thellium, Total	' 0.67 u	ng/kg	0.67	1.0
	•	Oranium, Total	0.85 U	mg/xg	0.85	1.0
•	,	Vanadium, Total	41.4	MG/KG	0.09	1.0
	•	Zino, Total .	67.0	MG/KG	0.15	1.0
		Zirconium, Total	22.0	NG/KG	1.0	1.0

1/23/06

INORGANICS DATA SUMMARY REPORT 07/21/06

CLIENT: TNUHANPORD RC-025 K0459 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0607L425

		•			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	PACTOR
	22772204444444	****************			********	********
-003	J12PW7	Silver, Total	` 0.07 u	HG/XG	0.07	1.0
	•	Aluminum, Total	6310	HG/KG	2.3	1.0
		Arsenic, Total	3.6	KG/XG	0.58	1.0
		Boron, Total	2.7	на/ка	0.23	1.0
		Barium, Total	94.4	MG/KG	0.02	1.0
		Beryllium, Total	0.47	на/ка	0.02	1.0
		Calcium, Total	5010	HG/KG	1.6	1.0
		Cadaius, Total	0.07 u	HG/KG	0.07	1.0
		Cobalt, Total	8.5	NG/KG	0.13	1.0
	•	Chromium, Total	2.7	ng/Rg	0,12	1.0
		Copper, Total	17.9	MG/KG	0.11	1.0
		Iron, Total	17400	MG/KG	0.52	1.0
•		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1360	MG/KG	2.2	1.0
		Lithium, Total	7.0	на/жа	0,03	1.0
	•	Magnesium, Total	4190	HG/KG	0.93	1.0.
•	•	Manganese, Total	350	HG/XG	0.03	1.0
		Holybdenum, Total	0.40	MG\KG.	0.28	1.0
•		Sodium, Total	216	NG/KG	0.73	1.0
	•	Nickel, Total	10.6	ng/kg	0.23	1.0
		Phosphorus, Total	932	NG/KG	0.86	1.0
		Lead, Total	5.4	HG/KG	0.30	1.0
		Antimony, Total	0.42 u	Тис/ка	0.42	. 1.0
		Selenium, Total	0.45 u	_на/ка	0.45	1.0
	•	Silicon, Total	277	на/ха	2.2	1.0
		Tin, Total	1.0 u	на/ка	1.0	1.0
	•	Strontium, Total	33.4	ng/Kg	ò.01	1.0
		Titanium, Total	1100	KG/KG	0.03	1.0
		Thallium, Total	0.67 u	ng/kg	0.67	` 1.0
	•	Uranium, Total	0.84 u	NG/KG	0.84	1.0
		Vanadium, Total	39.6	ис/ка	0.09	1.0
	•	Zino, Total	40.2	нс/ка	0.15	1.0
•		Zirconium, Total	22.2	ng/kg	. 1.0	1.0

1/4/2/6

INORGANICS DATA SUMMARY REPORT 07/21/06

CLIENT: TNUKANFORD RC-025 K0459 WORK ORDER: 11343-606-001-9999-00 LVL LOT #1 0607L425

•	•		•		REPORTING	DILUTION
EAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LINIT	PACTOR
			*******		**********	
-004	J12PW8	Silver, Total	0.07 น	NG/KG	0.07	1.0
		Aluminum, Total	3870	MG/KG	2.2	1.0
	,	Arsenic, Total	3.0	MG/KG	0.56	1.0
		Boron, Total	1.9	NG/KG	0.23	1.0
•		Barium, Total	10.2	NG/KG	0.02	1.0
•	•	Beryllium, Total	0.36	HG/KG	0.02	1.0
		Calcium, Total	3260	HG/KG	1.5	1.0
	•	Cadmium, Total	0.07 u	ис/ка	0.07	1.0
		Cobalt, Total	6.0	MG/KG .	0.13	. 1.0
		Chronium, Total	21.2	NG/KG	. 0.12	1.0
	•	Copper, Total	13.7	MG/KG	0.11	1.0
		Iron, Total	13700	MG/KG	0.51	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
•		Potassium, Total	1450	HG/KG	2.1	1.0
	·	Lithium, Total	6.3	HG/KG	0.03	1.0
		Magnesium, Total	3440	ng/kg	0.92	1.0
		Hanganese, Total	271	MG/KG	0.03	1.0
		Molybdenum, Total	0.35	HG/KG	0.27	. 1.0
		Sodium, Total	159	HG/KG	0.72	1.0
	•	Nickel, Total	10.6	MG/KG	0.23	1.0
		Phosphorus, Total	684	MG/KG	0.85	1.0
		Lead, Total	4.4	NG/KG	0.29.	.1.0
		Antimony, Total	0.42 u	Тис/ко	0.42	1.0
		Selenium, Total	0.44 u	HG/KG	0.44	1.0
		Silicon, Total	473 I	HG/KG	2.1	1.0
	•	Tin, Total	1.0 u	HG/KG	1.0	1.0
		Strontium, Total	25.7	MG/KG	0.009	1.0
	•	Titanium, Total	697	NG/KG	0.03	1.0
		Thallium, Total	0.65 u	HG/KO	0.66	1.0
		Uranium, Total	0.83 u	KG/KG	- 0.63	1.0
•	•	Vanadium, Total	32.3	MG/KG	0.09	1.0
	•	Zinc, Total	37.2	MG/KG	0.15	· 1.0
	;	Zirconium, Total	11.6	ng/kg	1.0	1.0

1/22/04

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD RC-025

LVL#: 0607L425

SDG/SAF#: K0459/RC-025

W.O.#: 11343-606-001-9999-00

Date Received: 07-06-06

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

- 1. This narrative covers the analyses of 4 soil samples.
- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

The samples were rerun for Aluminum, Beryllium, Iron, and Zirconium, along with the Phosphorous analysis, due to sample matrix.

- 3. All analyses were performed within the required holding times.
- 4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 6. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 7. All ICP Interference Check Standards were within control limits.
- 8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 45.5%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 25 pages.

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- 9. The matrix spike (MS) recoveries for 7 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 10. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

		<u>PDS</u>	<u>PDS</u>
Sample ID	Element	Concentration (ppb)	% Recovery
J12PW5	Aluminum	44,000	90.2
•	Iron	44,000	80.9
	Manganese	2,000	87.3
	Phosphorous	4,000	94.3
•	Antimony	100	95.7
	Silicon	2,100	92.6 .
:•	Titanium	2,100	84.5

- 11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 13. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

jjw/m07-425

7/24/02

Washington Closur	e Hanford	CI	HAIN OF CUST	ODY/S	AMPLE	ANAL	YSIS	REQU	JEST		RC-	025-021	Page 1	ot T
Collector C. Martinez Levin SI	mlekir		nny Contact . Martinez	Telephon 509-53				Project (KESSNE		lor P:	ice Code		Data Tu	Ø Lαaronaq 4
Project Designation 100-BC Remaining Pipelines	•		ing Location 7-D2; pipeline		•			SAF No. RC-025		Ąį	r Quality	. <u>.</u>	154	<u> </u>
Ice Chest No. AF	2-04-123	EL	Logbuok No. 1585-6		COA <i>RGOT</i>	82200	<u>6</u>	Method (fed ex		ent -			<u>-</u>	9999
Shipped To		Offsite	e Property No. AO	60516	, . 1	·	ı	Bill of L	ading/Ai	ir Bill Nọ.	See	OSA	2	
POSSIBLE SAMPLE HAZA	RDS/REMARKS 129	, 1/b	Preservation	Nose	Cool 4C	Cool 4C	Coal	4C N	C=6	None	None	Cool 4C		
		,00	Type of Container	aG	G/P	åG .	80	;	G	G/P	G/P	₩G	~.	
Special Handling and/or S cool 4 degrees centigrade	torage		No. of Container(s)	1	1	l l	. 1		ì	1	1	1		
	•		Volume	250g	120g -	120mL	2501	mL 50	Օւրք.	120ml.	120mL	_ 250mL		
0000	SAMPLE ANALY	SIS	· .	See inco (1) in Special Impenietions.	Chromium fiex - 7196	PCBs - 8082	Senu-V 8270A	(TCL) Sp	can (2) m	Gerton-14; Tritiara - HJ	NEKE 07: Strontiam- 89,90 Total Sr	Pesticules - 8011 "Chiero- Herbirdes - JOPASISI	196-2	7-06
018		•	•	,					- 1					Į.
Sample No.	Matrix *	Sample Date	Sample Time	THE PARTY	and the	40705	·推案	arg in	经特別		なが異心学	KA SA	***	STEEL FR
J12PW5	SOIL	6-29-0		1.1	1.	1.1	<u></u>		NA	<u>-NA</u>	NA	• ~	<u> </u>	
J12PW6	SOIL	6-29-01		<u>• •</u>	-	1	نــٰـا		\bot				ļ	
J12PW7 ·	SOIL .	6-24-01	1315	1	1	1.1/	· .					·		
J12PW8	SOIL	4.29.01	1325	<u> </u>	· ~	1	٠ ٢					•		<u> </u>
CIIAIN OF POSSESSIO		Sign/Prio	4 No see		1		<u> </u>					77	<u> </u>	
Relinquished By/Removed From Relinquished By/Removed From \$27.8/35 Kelinquished By/Removed From MINE mathematical Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From	Date/Time 1700 G-29-0G Date/Time 10-3-0 CH Date/Time	Received By/Sto 3728 Received By/Sto 44.3 fa. 7	and in $M = 0$ and in $M = 0$ bench $7/5/6$ wed in $1-c0$	pace/Time 17 29-06 Pate/Time 64 603 Pate/Time EX	(1) 1 Cada Moly Tin, 7471	CIAL INSTF CP Metals = 60 nium, Calcium, bdecum, Nicke Vanadium}; JC i = (CV) Gamma Spectro pium-153}	10TR (C Chromis L Phosp P Metab	Tient List) (/ ust, Cobsit, (shorts, Potas s = 6010A (A	Capper, In sium, Sele dd-on) (Ti esium 127	ou, Lead. Lit nimu, Silico itanium, Ura	hium, Magnesi n. Silver, Sodiu mium, Zinc, Zin Linepium, 1 52	um, Manganer m, Strontium, conium}, Mer	ic. Thalium. cury •	Matrix 9 SoSalt Str-Solid Str-Solid Str-Solid Str-Solid Str-Solid Str-Solid Str-Solid Str-Solid Str-Solid Analt Di-Drima Salida Di-Drima Lapads Tr-Thane
Relinquished By Resnoved From	06 0930 Date/Time	Received By/Su	usor 7-6-06	0930 Date/Time		rsonnel not a	wailabl			,				Wi-Wipe Lethind VeVeptolina A-Other
Relinquished By/Removed From	Date/Time	Received By/Sk	nred in D	Oute/Time	rc	linquish sam 18 <u>39</u> on_	pies fro	m 3728						<u> </u>
LABORATORY Received B		<u> </u>		Til	lie			·				1	Dute/Time	
FINAL SAMPLE Disposal M DISPOSITION	lethod			 -		Disp	osed By						Date/Time	
			 											

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Data Validation Supporting Documentation

<u>V</u> ALIDATION LEVEL:	· A	В	(c)	D	E .
PROJECT:	607-B7)· · · · · · · · · · · · · · · · · · ·	DATA PACKAG	e: Koy	S9
VALIDATOR:	TLT:	LAB: LL	I	DATE:	120/06
		· · · · · · · · · · · · · · · · · · ·	SDG:	KOYS9	
		ANALYSES	PERFORMED		
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
·					
SAMPLES/MAT	RIX	l		<u> </u>	<u> </u>
JIZPW	s Jr	PW4 ?	T12PW7	JIZ PW.	3
			· 	· <u> </u>	· · · · · · · · · · · · · · · · · · ·
	.	•	·		
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		<u> </u>			5011
Comments:					
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	MENT PERFORM				\widehat{K}
Initial calibrations	performed on all in	struments?	******************************	***************************************	Yes No N/
	•			*******************************	

ICV and CCV che	cks performed on a	ll instruments?			Yes No N/
ICV and CCV che	cks acceptable?	200121			Yes No N/.
Standards traceabl	e?				Yes No N/
Standards expired	?		*************************	***************************************	Yes No N/.
Calculation check	acceptable?			*************************	Yes No N/
		•		`	

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No No
ICB and CCB results acceptable? (Levels D, E)	
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	Ves No N/A
Field blanks analyzed? (Levels C, D, E)	Yes No N/A
Field blank results acceptable? (Levels C, D, E)	Yes No N/4
Transcription/calculation errors? (Levels D, E)	Yes No NHA
Comments:	NO FB.
	
4. ACCURACY (Levels C, D, and E)	_
MS/MSD samples analyzed?	Yes No N/A
MS/MSD results acceptable?	Yes (No) N/A
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards expired? (Levels D, E)	
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	
Standards traceable? (Levels D, E)	
Standards expired? (Levels D, E)	
Transcription/calculation errors? (Levels D, E)	
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable? Comments: Ontimony SC. 470 Jall . M5	
Comments.	
Silian 45.570 - Jall - LCS	
•	NO PAS

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5.	PRECISION (Levels C, D, and E)		1	
Duplica	ate RPD values acceptable?		No	N/A
Duplica	ate results acceptable?	(Yes)	No	NA
MS/MS	SD standards NIST traceable? (Levels D, E)	Yes	No(WA)
MS/MS	SD standards expired? (Levels D, E)	Yes	No	NA)
Field di	uplicate RPD values acceptable?	Yes	No(WA)
Field sp	plit RPD values acceptable?	Yes	No	N/A)
Transcr	ription/calculation errors? (Levels D, E)	Yes	No	NYA NYA
Commo	ents:		•	
		<u> </u>		
	·			
6.	ICP QUALITY CONTROL (Levels D and E)			·
ICP ser	ial dilution samples analyzed?	Yes	No	[AVA]
ICP ser	rial dilution %D values acceptable?	Yes	No	N/A
ICP pos	st digestion spike required?	Yes	No	N/A
	st digestion spike values acceptable?			
Standar	rds traceable?	Yes	No	N/A
Standar	rds expired?	Yes	No	N/A
	ription/calculation errors?		- 1	
Comme	ents:			\bigcup
	• '			
				

7. FURNACE AA QUAL	ITY CONTROL (Levels D and E)		
Duplicate injections performed a	s required?	Yes	NOTINA
Duplicate injection %RSD values	s acceptable?	Yes	No N/A
Analytical spikes performed as re	quired?	Yes	No N/A
Analytical spike recoveries accep	table?	Yes	No N/A
Standards traceable?		Yes	No N/A
Standards expired?		Yes	No N/A
MSA performed as required?		Yes	No N/A
Transcription/calculation errors?		Yes	No NA
Comments:			
<u> </u>	· · · · · · · · · · · · · · · · · · ·		
			
,			
8. HOLDING TIMES (al	•	<i>f</i> `	1
	?	\ /	No N/A
•			
•	· · · · · · · · · · · · · · · · · · ·		
 			
			
			
•			-

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)	
Results reported for all requested analyses?	
Results supported in the raw data? (Levels D, E)	Yes No NA
Samples properly prepared? (Levels D, E)	Yes No WA
Samples properly prepared? (Levels D, E) Detection limits meet RDL?	Yes No N/A
Transcription/calculation errors? (Levels D, E)	Yes No (N/X)
Comments:	<u> </u>
<u> </u>	
• •	· · · · · · · · · · · · · · · · · · ·

Additional Documentation Requested by Client

INORGANICS METHOD FLANK DATA SUMMARY PAGE 07/21/06

CLIENT: TNUHANPORD RC-025 K0459 WORK CRDER: 11343-606-001-9999-00 LVL LOT #: 06071425

	•	•		,	reporting	DILUTION
SAMPLE	SITE ID	ANALYTB	result	UNITS	LINIT	PACTOR

BLANKI	0610434-NB1 .	Silver, Total	0.07 U	NG/KG	0.07	1.0
•	•	Aluminum, Total	.2.5	NG/KG	. 2.4	1.0
•	•	Armenic, Total	0.61 u	ng/kg	0.61	. 1.0
		Boron, Total	, 0.24 u	MG/KG	0.24	1.0
		Barium, Total	0.02 u	ng/Kg	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
	•	Calcium, Total	2.4	HQ/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	" 0.14 u	MG/KG	0.14	1.0
	•	Chromium, Total	0.13 u	мо/ко	0.13	1.0
	•	Copper, Total	0.12 u	ис/ка	0.12	1.0
	•	Iron, Total	0.78	NG/KG	0.54	1.0
	•	Potassium, Total	2.3 u	HG/KG	2.3	1.0
		Lithium, Total	0.04	NG/KG	0.03	1.0
•	•	Magnesium, Total	0.97 u	MG/KG	0.97	1.0
		Hanganese, Total	0.03 u	MG/KG	0.03	.1.0
		Molybdenum, Total	. 0.29 u	MG/KG	0.29	1.0
		Sodium, Total	0.76 u	MG/KG	0.76	1.0
	•	Nickel, Total	0.24 u	NG/KG	0.24	1.0
	•	Phosphorus, Total	0.90 u	HG/KG	0.90	1.0
	•	Lead, Total	0.31 u	HG/KG	0.31	1.0
		Antimony, Total	0.44 1	MG/KG	0.44	1.0
		Selenium, Total	0.47 U	MG/KG	0.47	1.0
		Silicon, Total	2.3 u	HG/KG	2.3	1.0
		Tin, Total	1.1 u		1.1	1.0
		Strontium, Total	0.01	hg/kg	0.01	1.0
•	•	Titanium, Total	0.03 u	HG/KG	. 0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	.1.0
		Dranium, Total	D.88 U	HG/KG	0.00	1.0
		Vanadium, Total	0.09 u		0.09	1,0
		Zinc, Total	0.16 u	HG/KG	0.16	1.0
	•	Zirconium, Total	1.1 u	MG/KG	1.1	1.0
BLANK1	06C0133-MB1	Hercury, Total	0.02 u	HG/KG	0.02	1.0

INORGANICS ACCURACY REPORT 07/21/06

CLIENT: TWHANFORD RC-025 K0459
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 06071425

	• ,	•	SPIKED	INITIAL	SPIKED		DILUTION
Sample	SITE ID	ANALYTE	Sample	RESULT	AHOUNT	*RECOV	factor (SPK)
					*****	******	PS#######
~001	J12PWS	Silver, Total	4.1	0.07u	4.5	85.4	1.0
	•	Aluminum, Total	6940	698 6	192	496.9*	1.0
	•	Arsenic, Total	174	2.6	192	89.4	1.0
		Boron, Total	84.7	1.2	95.9	27.1	1.0
		Barium, Total	249	69.2	192	93.6	1.0
• •		Beryllium, Total	4.8	0.38	4.8	92.1	1.0
	•	Calcium, Total	6180	4050	2400	88.6	1.0
	•	Cadmium, Total	4.4	0.074	4.8	91.7	1.0
•		Cobalt, Total	51.4	7.2	47.9	93.1	1.0
		Chromium, Total	28.2	9.6	19.2	96.9	1.0
		Copper, Total	37.2	14.3	24.0	95.4	1.0
•		Iron, Total	34600	15900	95.9	-1300. *	1.0
	•	Potassium, Total	3590	1370	2400	92.3	1.0
		Lithium, Total	109	6.8	95.9	106.7	1.0
	•	Nagnesium, Total	6100	4030	2400	86.2	1.0
•		Manganese, Total	322 .	301	47.>	44.0*	1.0
•		Molybdenum, Total	91.3	0.284	95.9	95.2 .	1.0
•		Sodium, Total	2450	151	2400	95.8	1.0
		Nickel, Total	55.4	10.9	47.9	92.9	1.0
	•	Phosphorus, Total	492	849	95.9	44.4*	1.0
		Lead, Total	48.3	4.3	47.9	91.9	1.0
		Antimony, Total	27.1	0.424	47.9	56.6	1.0
		Selenium, Total	159	0.454	192	82.8	1.0
	• •	Silicon, Total	677	396	95.9	293.1*	1.0
	•	Tin, Total	90.7	1.0 u	25.9	94.6	1.0
		Strontium, Total	116	26.0	95.9	93.6	1.0
		Titanium, Total	972	967	95.9	5.0*	1.0
	•	Thallium, Total	180	0.67u	192	93.7	1.0
		Uranium, Total	83.1	0,844	95.9	86.7	1.0
	•	Vanadium, Total	78.0	36.7	47.9	86.2	1.0
		Zinc, Total	78.1	37.2	47.9	85.4	1.0
	•						

INORGANICS ACCURACY REPORT 07/21/06

CLIENT: TNUHANFORD RC-025 K0459

TAT. TOT #: 06071425

WORK	ORDER:	11343-606-001-9999-00

				201111	ASTUMP.	DIDOILON
Sanple	SITE ID	ANALYTE	Sample	RESULT	AMOUNT TRECOV	Pactor (SPK)
*****	*****************		******	******		========
-004	J12PWS	Mercury, Total	0.16	0.01u	0.15 108.8	1.0

INORGANICS PRECISION REPORT 07/21/06

CLIENT: TNUHANPORD RC-025 K0459 WORK ORDER: 11343-606-001-9999-00 LVL LOT #1 0607L425

WORK ORD	BR: 11343-606-001-9999	-00	• 1				
•	•		LAITIAL			DI	LUTION
Sample	SITE ID	ANALYTE	TJURES	REPLICATE	RPD	PA	CTOR (REP)
******		وي ويرحمد شققت لا در وجود تا 10	******			·	
-001REP	J12PW5	Bilver, Total	0.071	0.07u	· NC		1.0
		Aluminum, Total	5980	5340	11.3	•	1.0
		Arsenic, Total	2.6	2.5	3.9		1.0
		Boron, Total	1.2	0.98	19.9		1.0
		Barium, Total	69.2	62.4	10.3		1.0
•		Beryllium, Total	0.36	0.32	16.8		1.0
•		Calcium, Total	4050	3920	3.2		1.0
	•	Cadmium, Total	Q.07u	0.07u	NC		1.0
		Cobalt, Total	7.2	6.7	7.2		1.0
	, ·	Chronium, Total	9.6	1.6	11.0		1.0
		Copper, Total	14.3	13.6	9.5		1.0
		Iron, Total	13900	14400	10		1.0
		Potessium, Total	1370	1240	10.2		1.0
		Lithium, Total	. 6.0	6.0	12.5		1.0
		Hagnesium, Total	4030	3700	1.7		1.0
		Manganese, Total	301	284	5.6		1.0
	•	Molybdenum, Total	0.28u	0.29	سيبلا	معر لعلمان	1.0
		Sodium, Total	151	129	7.9	correction 100	1.0
		Nickel, Total	. 10.9	5.6	10.6	Matuloo	1.0
		Phosphorus, Total	849	199	5.7		1.0
	•	Lead, Total	4.3	4.0	7.2		1.0
	• '	Antimony, Total	0,421	0.42u	, MG		1.0
		Selenium, Total	0.454	0.45u	NÇ		1.0
•		Silicon, Total	396	375.	\$.6	•	1.0
		Tin, Total	1.0 u	1.0 u	NC		1.0
	•	Strontium, Total .	26.0	24.7	5.1	•	1.0
	•	Titanium, Total	967	859	11.8		1.0
		Thallium, Total	. 0.67u	0.67u	NC		1.0
•	•	Uranium, Total	0.84u	D. 84u	ИC	•	1.0
	•	Vanadium, Total	36.7	32.0	13.7		1.0
	•	Zinc, Total	37.2	33.7	9.9		1.0
		Zirconium, Total	18.0	15.4	13.0		1.0

Control Nation (NAVIS) by the Color

INORGANICS PRECISION REPORT 07/21/06

CLIENT: TNUHANFORD RC-025 K0459 MORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0607L425

	•	·	INITIAL		•		DILUTION
Sanple	SITE ID	ANALYTE	result	REPLICATE	RPD		PACTOR (REP)
******			*******	*****	******	•	
-004REP	J12PW8	Mercury, Total	0.01u	0.014	NC	•	1.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/21/06

CLIENT: TNUHANFORD RC-025 K0459 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0607L425

		• •				
			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	BAMPLE	MOUNT	UNITS	*RBCOV
	****************			2027**		220004
LCS1	06L0434-LC1 .	silver, LCS	49.2	50.0	NG/KG	98.4
	•	Aluminum, LCS	464	500	MG/KG	92.9
	•	Arsenic, LCS	926	1000	MG/KG	92.6
_	• '	Boron, LCS	466	50 0 ·	ng/kg	93.2
	⋰.	Barium, LCS	494	500	HG/KG	. 96.9
		Beryllium, LCS	24.2	25.0	но/ко	96.B
	• •	Calcium, LCS	2490	2500	mg/Kg	99.4
		Cadmium, LCS	24.1	25.0	Mg/Kg	36.4
		Cobalt, LC3	252	250	MG/KG	100.6
		Chromium, LCS	50.7	50.0	HG/KG	101.4
	•	Copper, LCS	123	125	MG/KG	98.5
		Iron, LCS	460	500	ив/кв	92.0
		Potassium, LCS	2320	2500	MG/KG	92.8
•	·•	Lithium, LCS	EOE	500	HG/KG	101.1
٠.	•	Magnesium, LCS	2400	2500	MG/KG	95.0
•		Manganese, LCS	76.0	75.0	но/ко	101.3
•		Molybdenum, LCS	508	500	NG/KG	101.5
	•	Sodium, LCS	2420	2500	MG/KG	96.7
		Nickel, LCS	196	200	но/ка	98.2
	•	Phosphorus, LCS	83.9	100	MG/KG	83.9
		Lead, LCS	.243	250	мо/ка	97.2
		Antimony, LCS	287.	300	HG/KG	95.7.
		Selenium, LCS	864	1000	MG/KG	86.4
i	• • •	silicon, LCS	220	500	MG/KG	45.5
•	• •	Tin, LCS	516	500	NG/KG	103.3
	•	Strontium, LCS	488	500	NG/KG	97.6
	•	Titanium, LCS	498	500	MG/KG	99.5
		Thallium, LCS	985	1000	на/ка	94.5
•		Uranium, LCS	97.9	100	NG/KG	97.9
		Vanadius, LCS	254	250	ng/kg	101.6
	•	Zine, LCS	95.6	100	NG/KG	95.6
		Zirconium, LCS	. 473	500	mg/kg	94.6
LCS1	06C0133-LC1	Nercury, LCS	6.4	€.2	Ng/kg	103.3

Date:

23 August 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

TechLaw, Inc.

Project:

100BC Remaining Pipeline & Sewers - Soil Full Protocol - Waste

Site 1607-B2

Subject: Pesticide/PCB - Data Package No. K0459-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0459 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample J DF 4	Sample Date	Media:	wiValidation -	Date Date
J12PW5	6/29/06	Soil	С	See note 1
J12PW6	6/29/06	Soil	С	See note 1
J12PW7	6/29/06	Soil	С	See note 1
J12PW8	6/29/06	Soil	С	See note 1

^{1 -} Pesticides by 8081A & PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

Holding Times

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-

detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike or matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicate samples were submitted for analysis.

· Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene

results exceeded the RQL. Under the WCH statement of work, no qualification is required.

Completeness

Data Package No. K0459 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

 Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

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Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0459	REVIEWER TLI	Projects (1607-82	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS/MSD/LCS analysis

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CL]									
Laboratory: LLI	SDG: K	0459]						
Sample Number		J12PW5		J12PW6		J12PW7_		J12PW8		
Remarks								1		
Sample Date		6/29/06		6/29/06		6/29/06		6/29/06		
Extraction Date		7/7/06		7/7/06_		7/7/06		7/7/06		
Analysis Date		7/16/06		7/16/06		7/16/06		7/16/06	_	
РСВ	RQL	Result	q	Result	a	Result	a	Result	J	C
Arocior-1016	100	13		14		13			3 l	
Arocior-1221	100	13	U	14	اد	13	υ		3 1	
Aroclor-1232	100	13	U	14	כו	_ 13	اد	1	<u>3</u> [i	<u>.</u>
Aroclor-1242	100	13	U	14	Ü	13		1	3][7
Aroclor-1248	100	13	Ü	14	Ų	13	U	1	3	υ_
Aroclor-1254	100	13	U	14		13	U	1	3 (U_
Aroclor-1260	100	13	U	14	٦	13	U	1	3 (IJ
			Г						T	
								1	Ŧ	
Sample Number		J12PW5		J12PW6		J12PW7	-	J12PW8		
Remarks	_							ļ		
Sample Date	,	6/29/06		6/29/06		6/29/06		6/29/06		
Extraction Date		7/7/06		7/7/06		7/7/06		7/7/06		
Analysis Date				7/18/06		7/18/06		7/18/06		
		7/17/06		1110000			_			
Pesticide	RQL	Result	Q	Result	Q	Result	<u>a</u>	Result		Q
Pesticide Alpha-BHC	· 5	Result 1.3	U	Result 1.3	٥	Result 1.3	٦	Result 1.	3 I	J
Pesticide Alpha-BHC Gamma-BHC (Lindane)	5 5	Result 1.3 1.3	U U	Result 1.3	ככ	Result 1.3 1.3	ט	Result 1.	3 I	J J
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC	5 5 5	Result 1.3 1.3 1.3	บ บ_ บ_	Result 1.3 1.3 1.3	כככ	Result 1.3 1.3 1.3	כככ	Result 1. 1. 1.	3 (3 (ט ט
Pesticide Alpha-BHC Gamma-BHC (Lindane)	5 5 5	Result 1.3 1.3 1.3 1.3	ט ט ט	Result 1.3 1.3 1.3 1.3	حاداداد	Result 1,3 1,3 1,3 1,3	داداداد	Result 1. 1. 1. 1. 1.	3 (3 (3 (
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC	5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3	ט ט ט ט	Result 1.3 1.3 1.3 1.3 1.3	داداداد	Result 1.3 1.3 1.3 1.3 1.3 1.3	כככככ	Result 1. 1. 1. 1. 1. 1.	3 (3 (3 (
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin	5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3	ט ט ט ט ט	Result	ככככככ	Result 1,3 1,3 1,3 1,3	כככככ	Result 1. 1. 1. 1. 1. 1. 1.	3 (3 (3 (3 (
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide	5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	ט ט ט ט ט ט ט ט ט	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	בכככככ	Result	כככככ	Result 1. 1. 1. 1. 1. 1. 0.6	3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin	5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	U U U U U U U U U U U U U U U U U U U	1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	כבכככככ	1.3 1.3 1.3 1.3 1.3 1.3 1.3 0.33		1. 1. 1. 0.6 0.4	3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide	5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	U U U U U U U U	1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	U U U U U U U	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	ככ כככככ	1. 1. 1. 0.6 0.4	3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane	5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	U U U U U U U	1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	U U U U U U U	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.	כככ כככככ	1. 1. 1. 1. 1. 0.6 0.4 1. 0.8	3 1 3 1 3 1 3 1 7	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I	5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט	1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	טטטטט טטטטטט טטטטטט	Result		Result 1. 1. 1. 1. 1. 0.6 0.4 1. 0.8	3 1 3 1 3 1 3 1 7 3 1	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	U U U U U U U U	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.	ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט	Result		Result 1. 1. 1. 1. 1. 0.6 0.4 1. 0.8 - 1.	3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4-DDE	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט	1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	כככככככ	Result		Result 1. 1. 1. 1. 1. 0.6 0.4 1. 0.8 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.	ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט ט	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.	כככ ככככככ	Result		Result	3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3 (3	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1. 1. 1. 1. 0.6 0.8 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1. 1. 1. 1. 0.6 0.8 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3 1 3 1 3 1 3 1 3 1 1	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT Endrin Aldehyde	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1. 1. 1. 1. 1. 0.6 0.4 1. 0.8 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3 1 3 1 3 1 3 1 3 1 3 1 3 1	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 0.33 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3		Result 1. 1. 1. 1. 1. 0.6 0.4 1. 0.8 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3 1 3 1 3 1 3 1 3 1 1	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT Endrin Aldehyde Endosulfan sulfate Methoxyclor	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1. 1. 1. 1. 0.6 0.4 1. 0.8 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3 1 3 1 3 1 3 1 3 1 3 1 3 1 5	
Pesticide Alpha-BHC Gamma-BHC (Lindane) Beta-BHC Heptachlor Delta-BHC Aldrin Heptachlor Epoxide gamma-Chlordane Endosulfan I alpha-Chlordane 4,4'-DDE Dieldrin Endrin 4,4'-DDD Endosulfan II 4,4'-DDT Endrin Aldehyde Endosulfan sulfate	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.		Result 1. 1. 1. 1. 1. 0.6 0.4 1. 0.8 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1	

Client: TNUHANFORD RC-025 K0459 Work Order: 11343606001 Page: 1

	Cust ID:	J12PW5	;	J129W5		J12PW5	,	J12PW6	;	J12PW7	Ť	J12PW8	8
Sample . Information	RFW#: Matrix: D.F.: Units:	001 SOIL 1.0 UG/I	10	001 MS SOIL 1.0 UG/K	0	001 MSD SOIL 1.0 UG/K	0	002 SOIL 1.0 UG/K		003 SOIL 1.0 UG/K	. 00	004 SOIL 1.0 UG/F	00
Surrogate:	Tetrachloro-m-xylene Decachlorobiphenyl	95 98	*	95 97	t t	95 98	1 1	90 98	*	98	* *	95 101	1
Aroclor-1016 Aroclor-1221 Aroclor-1232	· · · · · · · · · · · · · · · · · · ·	13 13 13	u U U U	98 13 13	**************************************	97 13 13	** f1= * * * * *	14 14 . 14	u U U U	13 13 13	fl .U .U .U	13 13 13	* ** : :
Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260		13 13 13	u u u	13 13 13 101	U U \$	13 13 13 101	U U U	14 14 14	U U	13 13 13 13	U U U	13 13 13	

	Cust ID:	PBLKLD		PBLKLD BS		
Sample Information	RFW#: Matrix: D.F.: Units:	1.0	00	05LE0550-1 SOIL 1.0 UG/1	00	M8/23/06
Surrogate:	Tetrachloro-m-xylene Decachlorobiphenyl		*	93 97	t	
3-0-3	# # G # # 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	*********	fl	******	-fl	======fl=====fl=====fl=====fl======fl======
Aroclor-1016		_ 13		95	ł	
Aroclor-1221		_ 13	ָּט	13	ט	·
Aroclor-1232		_ 13	U	· 13	U.	
Aroclor-1242		13	บ	13	U	
Aroclor-1248		_ 13	Ū	13	Ü	No pale
Aroclor-1254		13	U	13	Ü	
Aroclor-1260		13	U	98	ł	7

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. Y= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Pesticide/PCBs by GC, CLP List

RFW Batch Number: 0607L425 Client: TNUHANFORD RC-025 K0459 Work Order: 11343606001 Page: 1

000012

	Cust ID:	J12PWS	i	J12PW5	•	J12PWS	;	J12PW6		J12PW7		J12PW8	
Sample Information	RFW#: Matrix: D.F.: Units:	001 SOIL 4.00 UG/KG		001 MS SOIL 4.00 UG/KG		001 MSD SOIL 4.00 UG/KG		002 SOIL 4.00 UG/KG		003 SOIL 4.00 UG/KG		004 SOIL 4.00 UG/KG	
Surrogate:	Tetrachloro-m-xylene Decachlorobiphenyl	90 116	* *	93 105	* *	100 107	* * -fl	100 122	₹ * =fl===	94 115	* * fl==-	104 121	¥ ዩ ቴ=fl ·
Alpha-BHC		.1.3	ָט דיבי	· 73	.= <u>.</u>	7 7.	.=1 T:=-	1.3		1.3	n Settam.	1.3	.=II .
gamma-BHC (Lindane)		1.3	Ū	. 85	*	89	è	1.3	ט	1.3	Ü	1.3	Ū
Beta-BHC		1.3	ט	86		90 .	ş	1.3	Ū	1.3	ט	1.3	Ū
Heptachlor		1.3	U	74	*	76	ž.	1.3	Ü	1.3	Ü	1.3	Ü
Delta-BHC		1.3	Ü	60	¥	62	ž	1.3	Ü	1.3	U	1.3	Ü
Aldrin		1.3	U	85	2	. 88	ž	1.3	ับ	1.3	ū	1.3	บ
Unana akilan anasalda		'1.3	Ū	. 92	*	94 .	*	1.3	บ	0.33	J.I	0.60	J
gamma-Chlordane		:1.3	บ	: 87	+	. 90	*	1.3	บ	1.3	מ	0.43	J.I
Endosulfan I		. :1.3	Ū	90	ł	93	*	1.3	บ	1.3	Ū	1.3	Ü
Endosulfan Ialpha-Chlordane		1.3	Ū	. 91.	ł	93	٠٠ ۽	1.3	ע	1.3	Ü	0.87	J.I
4,4'-DDE		: /1.3	ប	70	*	72	¥	2.2	_	1.3	Ü	1.3	U
Dieldrin		·1.3	Ū	· 73.	*	77	ł	1.3	บ	1.3	Ü	1.3	Ū
Endrin		. 1.3	U	. 80	Ł	87	*	1.3	ับ	1.3	Ū	1.3	ซ
4,4'-DDD		1.3د	U	. 70	ł	71	*	1.3	σ.	1.3	Ü	1.3	Ū
Endosulfan II		1.3	U	: '92	*	96	* .	1.3	IJ.	1.3	Ü	1.3	บ
4,4'-DDT		1.3	Ū	· 81	*	84	¥	1.3	U	1.3	Ü	11	
Endrin aldehyde		1.3	U	78	ł	73	ł	1.3	ប	1.3	บ	1.3	ប
Endosulfan sulfate		1.3	U	85	*	89	ł	0.40	J	1.3	ับ	1.3	Ū
Methoxychlor		1.3	. σ	70	*	72	*	1.3	ប	1.3	Ü	15	.I
Endrin ketone		1.3	ប	.99	ł	100	ł	1.3	บ	1.3	ับ	1.3	ד
Toxaphene		13	Tu	13	บ	13	ซ	13	UT	13	UI	13	Lu

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Sample Information	Matrix:	•	m 1								
Turormation		06LE0550-MB1 SOIL		06LE0550-MB1 SOIL 1.00							
						• •					•
	D.F.:		00 :						•		
	Unita:	· UG/I	نانا	ÜG/I	(G		٠.	:	•		
Surrogate: Tetrachloro-	m-xylene	92	ł	98	*						
. Decachloro	biphenyl	96	ł	102	ł	•	•				
			-fl		fl-		fl		fl=====	fl-	=====f1
Alpha-BHC		0.33	U	96	*	•	•				•
gamma-BHC (Lindane)		_ 0.33	ע	104	¥						
Beta-BHC		_ 0.33	U	101	*		•		•	•	
Heptachlor	٠.	_ 0.33	U	· 96	¥		•			•	
Delta-BHC		0.33	U	86	Ł					•	•
Aldrin		_	. D	106	\$	•		•			
	<u> </u>	_ 0.33	Ü	105	*		•			•	
gamma-Chlordane	• <u>, </u>	_ · 0.33	Ū	106	*						•
Endosulfan I		0.33	U	106	Ł						
alpha-Chlordane		0.33	U	105	Ł	•			-	<u> </u>	
4,4'-DDE		0.33	Ū	. 95	Ł	•				. •	•
Dieldrin		0.33	Ü	100	*	•	•			•	
Endrin		0.33	Ū	106	Ł					• •	. •
4,4'-DDD		0.33	U	89	*		•				
Endosulfan II		_ 0.33	U	104	*						
4,4'-DDT :		0.33	U.	103	k					•	
Endrin aldehyde		0.33	U	91	¥		•				
Endosulfan sulfate		0.33	Ū.	104	ŧ	•	-				
Methoxychlor		0.33	· D	· 103	¥		•				
Endrin ketone		0.33	U	102	t .						
Toxaphene		3.3	Ū	3.3	U				•		•

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

W8/23/d

Laboratory Narrative and Chain-of-Custody Documentation



Case Narrative

Client: TNU-HANFORD RC-025

LVL#: 0607L425

SDG/SAF # K0459/RC-025

W.O. #: 11343-606-001-9999-00

Date Received: 07-06-2006

PCB

Four (4) soil samples were collected on 06-29-2006.

The samples and their associated QC samples were extracted on 07-07-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-16-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

- 1. The samples were extracted and analyzed within required holding time.
- 2. The sample results were reported on a dry-weight basis.
- 3. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. The blank spike recoveries were within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. The initial calibrations associated with this data set were within acceptance criteria.
- 9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

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- 10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som/r:\group\data\pest\tnu hanford\0607-425.pcba

Date

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Case Narrative

Client: TNU-HANFORD RC-025

LVL#: 0607L425

SDG/SAF # K0459/RC-025

W.O. #: 11343-606-001-9999-00

Date Received: 07-06-2006

CHLORINATED PESTICIDES

Four (4) soil samples were collected on 06-29-2006.

The samples and their associated QC samples were extracted on 07-07-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 07-17,18-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

- 1. Samples were extracted and analyzed within required holding time.
- 2. All sample results were reported on a wet-weight basis.
- 3. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. All blank spike recoveries were within acceptance criteria.
- 7. All matrix spike recoveries were within acceptance criteria.
- 8. All samples required a 4-fold instrument dilution due to the nature of the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.
- 9. The initial calibrations associated with this data set were within acceptance criteria.
- 10. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.



- 11. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.
- 12. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

som/r:\group\data\pest\tnu hanford\0607-425.pst

7/21/a

Date

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Washington Closur	e Hanford	C	HAIN OF CUST	ODY/SA	AMPLE	ANAL	YSIS	REQUES	T	<u> </u>	R	C-025-021	Page 1	of] .
C. Martinez Kevin S			any Contact Martinez	Telephon 509-53				Project Coor KESSNER. J		Pri	ce Code		Data Tu	raerouad C
rolect Designation 100-BC Remaining Pipelines	• •		ling Location 07-B2; pipeline		•	٠.		SAF No. RC-025		Air	Qualit	Sy .	۱۶,	1/1/5
Chara No.	5-04-123	Wield	Logbook Na. -1585-6		COA <i>260</i> 7	B2Z00	ე .	Method of Si fed ex	iomeut'					<u>.</u>
Shipped Fo	ON THE CION OF THE PROPERTY OF	Offsit	e Property No. AO	60516	6			Bill of Ladie	e/Air Bill	No.	Se-	05,	ا م	
POSSIBLE SAMPLE HAZA			Preservation	None	Cool 4C	Cool 4C	Çool 4	C None	Non		None	Coel 4C		
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Special Handling and/or S cool 4 degrees centigrade	Storage	•	No. of Container(s)	1	ı	. 1	. 1	1	-	•	1	1	1	
_	•	:	Volume	250g	120y -	120mL	250rg	L SOOmL	1201		120mL	250mL		
000019	Sample anal	VSIS		See item (1) is Special Imanucions	Otromium Het - 71%	PCH1 - 8082	Semi-V(8270A (in Gerton Tritium	γγί; •Β3	NEKEFOJ: Stroatane 89,40 Tot Sr	BARL CULAR	ヤロルー	7-00
. Sample No.	Matrix *	Sample Date	Sample Time	1200	H avery		A.			191				5245
J12PW5	SOIL	6-29-0		• /	• 1	1.1	1.	/ NI	1 4	/A]	NA	・・レ		
112PW6	. SOIL	4-29-6		س ،	سرا	<u> </u>	<u> </u>					1		
J12PW7	SOIL	6-29-0	6 1315	سسن ا	<u> </u>	• 1	•	_	_ _			• •	<u> </u>	<u> </u>
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CILAIN OF POSSESSIC	DetaTime 1702		nt Names ored in D	alc/Time /7		CIAL INSTI	RUCTIO	ONS	* - 					Matrix
Kevin Single Relimpished By/Removed From \$228/30 7/5/04 Relimpished By/Removed From 4	6-29-06 Date/Time 1030	3728	NG 3B 6- ored n NEW D Hone & 7/5/0	29-06.	(1) 1 Cada Moly 3 d Tin, '	nium, Calcium, Ibdenum, Nick Vanadium}; K ~(CV)	, Cimomiu el, Phospi IP Metals	lient List) (Alom m., Cobalt. Copp torus. Polassium, - 6010A (Add-or	r, Iron, Les Selenium, :) [Titonium	d, Lithi Silicon I, Urani	ium, Magn Silver, So ium, Zinc,	esium, Mangane dinus, Strontium Zirconium), Me	se, Thallium, reury -	SeSell SE-Sell SO-Selld Si-Sindy W = Wat O-Od A-4ar
Melychical synDanoved From 7-6	03/66 1500 Date/Time 0-66 0930	Rocofrei D. 75	1-60 ored by Unstr 7-6-06	EX ace/Time 0934	Euro	<u>Sounia Grecin</u> pium-133}	ustapy (†	Cartina) (Carina			Spypium I	(57, <i>Euro</i> piu <u>u-</u>)	}	OS-Oraș OL-Oraș Poțipan Wi-Wip LaLapaid Voligat
Relinquished Dy Removed From	Date/Tiene	Received By/St	······································	ate/Time	re	rsonnel not : linquish sam	pies fron	n 3721	٠-)-Ona
Reimquished By/Removed From	Date/Time	Received By/St	ored in D	ate/Time	Ro	f# <u>38</u> on_	<u>7 5</u>	<u> 10C</u>						
LABORATORY Received E SECTION	By•			Tit	ile			• •					Date/Time	
FINAL SAMPLE Disposal A	schod					Disp	osed By		-				Date/Time	

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	D	E
PROJECT:	1607-B	2	DATA PACKAG	E: 14045	59
VALIDATOR:	TLI	LAB:		DATE: P	20/66
			SDG:	<0459	
		ANALYSES	PERFORMED		
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MAT	RIX				
JISPW	5 J12	PWG J	12PW7	JIZPW	8
	·		,		
	·· - · - · · · · · · · · · · · · · · ·				Soil
			4	•	<u> </u>
	on documentation p	•		E	Yes No N/A
conditions.		• •			
<u> </u>					
			<u> </u>		
			•		
2. INSTRUM	MENT PERFORM	IANCE AND CAL	IBRATIONS (Lev	els D and E)	6
Initial calibrations a	acceptable?	***************************************	***************************************		Yes No N/A
Continuing calibrat	ions acceptable?	************************		••••••••••	Yes No N/A
Standards traceable	?	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	****************************	***************************************	Yes No N/A
Standards expired?	***************************************		***************************************	***************************************	Yes N N/A
Calculation check a	cceptable?	*************************	.===.0000000000000000000000000000000000	*********************	Yes Nd N/A
DDT and endrin bro	eakdowns acceptab	le?	***************	*****************************	Yes No W/A
Comments:					
-			•		

3. BLANKS (Levels B, C, D, and E)	
Calibration blanks analyzed? (Levels D, E)	Yes No N/
Calibration blank results acceptable? (Levels D, E)	Yes No N/
Laboratory blanks analyzed?	Yes No N/A
Laboratory blank results acceptable?	(Yes)No N//
Field/trip blanks analyzed? (Levels C, D, E)	Yes (No) N/4
Field/trip blank results acceptable? (Levels C, D, E)	Yes No 🕢
Transcription/calculation errors? (Levels D, E)	Yes No(N/A
Comments:	NOFE
	<u> </u>
	·
4. ACCURACY (Levels C, D, and E)	
Surrogates analyzed?	Xey No N/
Surrogate recoveries acceptable?	Yer No N/
Surrogates traceable? (Levels D, E)	Yes No (N/
Surrogates expired? (Levels D, E)	Yes No 🕢
MS/MSD samples analyzed?	(Yes) No N/
MS/MSD results acceptable?	Yes No N/
MS/MSD results acceptable?	Yes No 🕠
MS/MSD standards expired? (Levels D, E)	Yes No N/
LCS/BSS samples analyzed?	(Yes) No N/
LCS/BSS results acceptable?	
Standards traceable? (Leveis D, E)	Yes No (N/
Standards expired? (Levels D, E)	Yes No
Transcription/calculation errors? (Levels D, E)	
Performance audit sample(s) analyzed?	
Performance audit sample results acceptable?	
Comments: to toxophen US, MSD or LCS	_
	,
	· · · · · · · · · · · · · · · · · · ·

5. PRECISION (Levels C, D, and E)	
Duplicate RPD values acceptable?	
Duplicate results acceptable?	Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E)	
MS/MSD standards expired? (Levels D, E)	Yes No (N/A)
Field duplicate RPD values acceptable?	
Field split RPD values acceptable?	Yes No (N/)
Transcription/calculation errors? (Levels D, E)	Yes No 🐠
Comments:	<u> </u>
	•
6. SYSTEM PERFORMANCE (Levels D and E)	
Chromatographic performance acceptable?	Yes No AA
Positive results resolved acceptably?	Yes No N/A
Comments:	• •
7. HOLDING TIMES (all levels)	\triangle
Samples properly preserved?	Yes No N/A
Sample holding times acceptable?	
Comments:	
Comments.	· ·

6. COMPOUND IDENTIFICATION, QUANTITATION, AND DET	ECTION EIMITS (an
levels)	
Compound identification acceptable? (Levels D, E)	No NA
Compound quantitation acceptable? (Levels D, E)	No (N/A
Results reported for all requested analyses?	
Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No N/
Detection limits meet RDL?	Yes No N/A
Transcription/calculation errors? (Levels D, E)	
comments.	
	
	· · · · · · · · · · · · · · · · · · ·
	·
9. SAMPLE CLEANUP (Levels D and E)	\sim
Fluoricil ® (or other absorbent) cleanup performed?	Yes No
Lot check performed?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Check recoveries acceptable?	a a constant and a co
GPC cleanup performed?	
GPC check performed?	
GPC check recoveries acceptable?	
GPC calibration performed?	
GPC calibration check performed?	Yes No N/A
GPC calibration check retention times acceptable?	Yes N/A
Check/calibration materials traceable?	Yes No N/A
Check/calibration materials Expired?	
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	
·	
•	

Date:

23 August 2006

To:

Washington Closure Hanford Inc. (technical representative)

From:

Project:

100BC Remaining Pipelines & Sewers - Soil Full Protocol - Waste

Subsite 1607-B2

Subject: Wet Chemistry - Data Package No. K0459-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0459 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample IDK	Sample Date	Media 🤲	Validation	Date
J12PW5	6/29/06	Soil	C	See note 1
J12PW6	6/29/06	Soil	С	See note 1
J12PW7	6/29/06	Soil	С	See note 1
J12PW8	6/29/06	Soil	С	See note 1

¹⁻ Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Qualified Data Summary and Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI. If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

Control of the Artist of the Control
All holding times were acceptable.

Method Blanks

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

· Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample

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and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

· Completeness

Data package KO459 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

WCH, Contract #20266, Validation Statement of Work, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, 100 Area Remedial Action Sampling and Analysis Plan, U.S. Department of Energy, February 2005.

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Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value.

 The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

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Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0459 REVIEWER: Projects 607/82 RAGE 1 OF 1	T T T T T T T T T T T T T T T T T T T
COMMENTS: No qualifiers assigned]

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHING	TON CLOS	URE HA	NF	ORD]			
Lab: LLI	SDG: I	K0459							
Sample Number		J12PW5		J12PW6		J12PW7		J12PW8	
Remarks				1		ł			
Sample Date		6/29/06		6/29/06		6/29/06		6/29/06	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q_
Chromium VI	0.5	0.20	Ü	0.20	U	0.20	U	0.20	U

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/14/06

CLIENT! THU-HANFORD RC-025

WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0607L425

	•	. •			•	REPORTING	DILUTION
Sample	SITE ID	ANALYTE		RESULT	UNITS	LIMIT	PACTOR

-001	J12PW5	% Solids	.,	99.3	t	0.01	1.0
		Chromium VI		0.20 u	MG/KG	0.20	1.0
				•			
-002	Jl2PW6	t Solids		97.9	*	0.01	1.0
•		Chromium VI		0.20 ນ	MG/KG	0.20	1.0
-003	J12PW7	* Solids		99.7		0.01	1.0
	•	Chromium VI	•	0.20 u	HG/X3	. 0.20	1.0
	• •	•					
-004	J12PW8	* Solids		99.8	*	0.01	1.0
		Chromium VI		0.20 u	MG/KG	0.20	. 1.0

1/23/or

Laboratory Narrative and Chain-of-Custody Documentation



Analytical Report

Client: TNU-HANFORD RC-025 K0459

LVL#: 0607L425

W.O.#: 11343-606-001-9999-00

Date Received: 07-06-06

INORGANIC NARRATIVE

1. This narrative covers the analyses of 4 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

- 3. Sample holding times as required by the method and/or contract were met.
- 4. The results presented in this report are derived from samples that met LvLl's sample acceptance policy.
- 5. The method blank for Chromium VI was within the method criteria.
- 6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.
- 7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.
- 8. The replicate analyses for Chromium VI and Percent Solids were within the 20% Relative Percent Difference (RPD) control limit.
- 9. Results for solid samples are reported on a dry weight basis.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

njp\i07-425

Date

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

SECTION OF THE WAR DESIGNATION AND THE

000012

Washington Closu	re Hanford	CI	IAIN OF CUST	ODY/SA	MPLE	CANALY	'SIS	REQUEST	<u>' </u>	RC-	025-021	Late T	(4 T
Collector C. Martinez Kevin S			ny Contact Jartinez	Telephoni 509-53				Project Coordin	P.	rice Code		Data Tu	Luaroand [©]
Project Designation 100-BC Remaining Pipeline	•		Sampling Location SAF No. RC-025 Air Quality					150	_/				
	5-04-123	Field I	.ogbook No. 1585-6	<u> </u>	COA <i>R607</i>	1822.00	·)	Method of Ship fed ex	meat	•			988
Shipped For Services L	JONATE CION	onsite of the	Property No. AO	60516	- -			Bill of Lading/	Air Bill No	See	OSF	2	
POSSIBLE SAMPLE HAZ	ARDSTREALARMS	411	Preservation	None	Caol 4C	Çeel 4C	: Cool	4C Nome	None	None	Cool 4C		.,
	06/2	91 00	Type of Container	#G	G/P	₽Ğ	, a/C	i iG	G/P	G/P	»G	~.	
Special Handling and/or cool 4 degrees centigrade	Storage		No. of Container(s)	-	- 1	1	1	. '	1	1	į		
	•	•	Yolume :	250g	120g	120mL	250	_	120ml 34 6-24-66	t20mL	150mL		
000013	SAMPLE ANAL	.ysis		See item (1) in Special Instructions.	Chromism Hex - 7196	PCUs - \$042	Semi-V \$270A	OA - See item (2) in	Gestionesel; Tritium - H3	Nicke-07; Strontium- 89,90 Total Sr	Pesticules - 8081 Chiero- ficioles - per A8151	76-2	7-06
01:													
Sample No.	Matrix *	Sample Date	Sample Time	ALTERNY.	"ALTECAL	9 13 7 22	X. 8	大学等	No.	NAME OF	南瓜园	1005	THE PARTY OF
J12PW5	SOIL	6-29-0		1./	1.1		<u>ن</u>	/ NA	NA	NA			
J12PW6	SOIL	6-29-6	1308	1 · ·			نـــٰــا		 			<u> </u>	
J12PW7	SOIL	6-29-01	1315	1	1	-1./			 	 	1	<u> </u>	
J12PW8	SOIL	4.29.0	1325	1:	1. ~	1-/-	<u> </u>				771-11	<u> </u>	
				<u> </u>	!,	<u> </u>			1	<u> </u>	77.7	1	1 Adaption A
CHAIN OF POSSESS		Sign/Prin		MoTune /		ECIAL INSTR	lucti	ONS	••			-	Matrix *
Relinguished By Removed From	G-29-0C			29-06	- [(1)			Client List) (Aluminu tura, Cobalt, Copper,					5-Solt SE-Sodment SO-Sold
Relinquished By Restored From	Date/Time	Received By/Su	red in Mille	ale/Time	Mo	olybdesum, Nicki	L Pivos	shores. Potessium, S	elenium. Silic	on Silver, Sodie	mı, Strontina.	Thailium,	Si-Sinde W = Water
3228/3/5 7/5/09	1030	matan			747	71 - (CV)		s - 6010A (Add-on)	_	•			FO-OI
Relinquished By Removed From	レント Date/Time レノ フバンカム メック	Received By/Sk		EX		- Comme Spectre ropius-155)	socopy (TCL List) (Coolum 1		· ·	7 Forepient !	<u></u>	DS-Draw Solids DC-Orace Liquids
Religious lied By Removed From	Date/Tune	Received By/Mi	red in 1	Dale/Timo 093		· ·		8 6.	29-06	-	•		ToTom: BloWat LoLiped
Relinquished By/Removed From	G-ob 0930 Date/Time	Received By/St	ored in 0	Date/Time.	P	'ersonnel not a				•			7=Open 1,4/chchyann
Relinquished By/Reusoved From	. Date/Time	Received By/\$6	pred In E	Date/Tinne	;	relinquish sam kef# <u>38</u> on_	ples fro	510 <u>C</u>		•			
LABORATORY Received	Ву			Ţi	itle			 	· ·			Vare/Time	
SECTION FINAL SAMPLE Disposal DISPOSITION	Method		 			Disp	nsed By			•		DatoTime	
BULEE 011 (08/29/2005)	<u></u>							•		<u> </u>	<u></u>		•

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Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

LEVEL:	1	· I		<u> </u>	1
PROJECT:	1607-5	32	DATA PACKAG	e: Koys	59
VALIDATOR	: TLI	LAB: LLJ	_	DATE:	20/00
			SDG:	120459	· · · · · · · · · · · · · · · · · · ·
		ANALYSES	PERFORMED		
Anions/IC	тос	тох	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	рн	NO ₃ /NO ₂
Sulfate	TDS	TKN	Phosphate		
SAMPLES/MA	ATRIX	· · · · · · · · · · · · · · · · · · ·			
JIZPL	us th	2PW4 -	TIZPW 7	JIZPU)8.
			 		
		· · · · · · · · · · · · · · · · · · ·			
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					Soil
Technical verific	PACKAGE COMP		•		
			•		
Technical verific	cation documentation	present?			
Technical verifice Comments:	cation documentation	mance and cal			Ye No N/
Technical verific Comments: 2. INSTR Initial calibration	cation documentation	MANCE AND CAI	JBRATIONS (Lev	els D and E)	Yes No N/
Technical verifice Comments: 2. INSTR Initial calibration	RUMENT PERFOR	MANCE AND CAI	LIBRATIONS (Lev	els D and E)	Yes No N/
Technical verific Comments: INSTR Initial calibration Initial calibration	RUMENT PERFOR on all in the sacceptable?	MANCE AND CAI	JBRATIONS (Lev	els D and E)	Yes No N/
Comments: INSTR Initial calibration ICV and CCV cl	RUMENT PERFOR	MANCE AND CAI nstruments?	JBRATIONS (Lev	els D and E)	Yes No N/ Yes No N/ Yes No N/ Yes No N/ Yes No N/.
Comments: INSTR Initial calibration ICV and CCV cl ICV and CCV cl Standards tracea	RUMENT PERFORM Ins performed on all in the case performed on a MANCE AND CAI nstruments?	JBRATIONS (Lev	els D and E)	Yes No N/	
Comments: INSTR Initial calibration ICV and CCV cl ICV and CCV cl Standards tracea	RUMENT PERFORM Ins performed on all in the cks performed on a the cks acceptable?	MANCE AND CAI	JBRATIONS (Lev	els D and E)	Yes No N/

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GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No WA
ICB and CCB results acceptable? (Levels D, E)	Yes No (N/A)
Laboratory blanks analyzed?	(Yes)No N/A
Laboratory blank results acceptable?	
Field blanks analyzed? (Levels C, D, E)	Yes No N/A
Field blank results acceptable? (Levels C, D, E)	Yes No W/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Comments:	no FB
	· · · · · · · · · · · · · · · · · · ·
4. ACCURACY (Levels C, D, and E)	
Spike samples analyzed?	
Spike recoveries acceptable?	(Ye) No N/A
Sike standards NIST traceable? (Levels D, E)	Yes No N/A
Spike standards expired? (Levels D, E)	Yes No N/A
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	~~~
Standards traceable? (Levels D, E)	
Standards expired? (Levels D, E)	Yes No (N/A)
Transcription/calculation errors? (Levels D, E)	
Performance audit sample(s) analyzed?	<u> </u>
Performance audit sample results acceptable?	Yes No (N/A
Comments:	Mo 745
	,
•	

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5.	PRECISION (Levels C, D, and E)	\supset
Dupli	icate RPD values acceptable?	
Dupi	icate results acceptable?	Yel No N/A
MS/N	ASD standards NIST traceable? (Levels D, E)	Yes No NA
	ASD standards expired? (Levels D, E)	
Field	duplicate RPD values acceptable?	Yes No
Field	split RPD values acceptable?	Yes No NA
Trans	split RPD values acceptable? cription/calculation errors? (Levels D, E)	Yes No (N/A)
	ments:	
		· .
•		
6.	HOLDING TIMES (all levels)	
Samp	les properly preserved?	
- Samp	le holding times acceptable?	Yes No N/A
	nents:	
•		

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7.	RESULT QUANTITATION AND DETECTION LIMITS (all levels)	25
Results	reported for all requested analyses?	(.Yes) No N/A
Results	supported in the raw data? (Levels D, E)	Yes No N/A
	s properly prepared? (Levels D, E)	
	on limits meet RDL?	
Transc	ription/calculation errors? (Levels D, E)	Yes N(N/X)
Comm	ents:	
		•
•		
-		

Additional Documentation Requested by Client

Licaville Laboratory, Inc.

INCRGANICS METHOD BLANK DATA SUMBRY PAGE 07/14/0

CLIENT:	CLIENT: INJ-HANFORD RC-025		TAT	LVL LOT #, 0607L425	6071425	·
HORK ORD	WORK ORDER: 11343-606-001-9999-00				÷	
					REPORTING	DILUTION
SAMPLE	SITE ID	MALYTE	RESULT	TIMIT SIIND	TIMIT	FACTOR
BLANKIO	BLANKIO 06LVI070-P31	Chronium VI	0.20 u HG/KG	MQ/KG	0.20	
	· ·	•				

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/14/06

CLIENT: INU-HANFORD RC-025

WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0607L425

Sample	SITE ID	ANALYTE	spiked Sample	initial . Result	SPIKED	TRECOV .	PACTOR (SPK)
		20200020000000000000000	*******				*********
001	J12PW5	Soluble Chromium VI	3.5	· 0.20u	4.0	88,6	. 1.0
	•	Insoluble Chromium VI	1250	0.204	1250	100.4	100
BLANKI 0	06LVI070-MB1	Soluble Chromium VI	4.0	0.20u	4.0	100.7	1.0
		Insoluble Chromium VI	1180	0.200	1130	104.0	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/14/06

CLIENT: TNU-HANFORD RC-025

LVL LOT #: 0607L425

WORK ORDER: 11343-606-001-9999-00

			INITIAL		•		DILUTION .
Sample	SITE ID	ANALYTE	· RESULT	REPLICATE	RPD .	•	PACTOR (REP)
	************			******			
-001REP	J12PW5	Chromium VI	0.201	0.20u	NC		1.0
-004REP	J12PW8 .	* Solids	99.8	99.8	0.050		1.0